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NOTES ON EARLY COLLECTIONS AND THE DISTRIBUTION OF THE RED ALGA *CUMATHAMNION SYMPODOPHYLLUM*

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ABSTRACT

Specimens (in FH and PC) of *Cumathamnion sympodophyllum* M.J. Wynne and K. Daniels (Delesseriaceae, Rhodophyta) made by C. G. Pringle at Cape Mendocino, northern California in 1882 are the first known collections of this rare monospecific genus. A collection (US) made by E.Y. Dawson from Trinidad Head, Humboldt County, and reported in 1965 as a "very compact, short-bladed" form of *Delesseria decipiens* J. Agardh is re-determined to be *C. sympodophyllum*. Records of *C. sympodophyllum* from Oregon, Washington, and British Columbia (Canada) are based on one collection from British Columbia, which cannot be verified. This taxon is most likely restricted to very exposed lower littoral rocky outcrops of Sonoma, Mendocino, and Humboldt counties in California.

Key Words: *Cumathamnion sympodophyllum*, biogeography, endemic, marine algae, Rhodophyta.

A recent visit to the National Museum d'Histoire Naturelle, Paris (PC) allowed me to find an interesting algal specimen held in the Bornet and Thuret Herbarium. The specimen [filed in the *Pteridium* folder as "106-2-7" with the number "TA 21844"] bore the following label data: "*Delesseria pleurospora* Harv. Cape Mendocino, Cal. leg. C. G. Pringle", and in a different hand: "Farlow 1883" and "Herbarium G. Thuret", with a handwritten note, apparently by Bornet: "Je ne reconnais ni l'espéce ni le genre de cette algue." I next requested that staff at the Farlow Herbarium check for any other material of this Pringle collection in their holdings, and they located one dated "1882" (Fig. 1). These specimens, with densely congested branching that is pectinately arranged in the final orders and with thickened, fleshy (cartilaginous), denuded primary axes, are clearly identifiable as *Cumathamnion sympodophyllum* M.J. Wynne & K. Daniels (Wynne and Daniels 1966), and they represent the earliest known collection of this taxon.

Cyrus Guernsey Pringle was one of the most prolific plant collectors of all time, having collected and distributed more than 500,000 specimens that he collected from the United States, Canada, and Mexico (Davis 1936). In 1880, Pringle made his first trip to the Pacific Slope, working as a botanical collector for the American Museum of Natural History, making general collections for Asa Gray, and exploring the forests of the region for the United States Census Department. He collected extensively in the Pacific states and in Mexico between 1880 and 1909 (Stafleu and Cowan 1983). His biography by Davis (1936) contains the diaries of his collecting trips to Mexico (1885–1909) but not of his earlier trips to California. However, according to information at the on-line site Consortium of California Herbaria (http://ucjeps.berkeley.edu/consortium/), Pringle collected in Mendocino County during the first two weeks of August, 1882.

The record of *Pteridium* (or *Delesseria*) *pleurospora* does not appear to have entered into the algal literature for California or the Pacific coast (Anderson 1891, 1894; Abbott and Hollenberg 1976). *Delesseria pleurospora* (Harvey 1855) was described from New Zealand and was variously transferred to *Membranoptera* (Kuntze 1891), *Pteridium* (Agardh 1898), *Hydrolapatha* (Kuntze 1898), and *Nitophyllum* (Laing 1927). I regard it as conspecific with *Schizoseris dichotoma* (Hooker f. et Harvey) Kylin, a species with a distribution restricted to the Southern Hemisphere (Papenfuss 1964; Ricker 1987; Ramírez and Santelices 1991; Adams 1994).

In 1965 Ken Daniels and I were identifying algal specimens that we had collected from Mendocino City in northern California and were planning to describe some of our specimens as representing a new genus and species. At that time E. Yale Dawson, Curator of Algae at the Smithsonian Institution, published a manual to the marine algae of Humboldt County (Dawson, 1965). He had taught a course at Humboldt State College [now Humboldt State University] that summer, and it seemed possible that he may have come across the same alga that we were proposing to name as new to science. So on October 25, 1965, I wrote to him, telling him that our purported undescribed genus at first glance resembled *Delesseria decipiens* but had a distinctive sympodial development. I asked if he might have obtained such an alga in his Humboldt

FIG. 1. *Cumathamnion sympodophyllum*. Collection made by C. G. Pringle in 1882 from Cape Mendocino, California. (FH).

County collections that were not yet determined that matched our alga. He responded (October 29, 1965), saying that he had not come across anything other than *Delesseria decipiens* and *Membranoptera multiramosa* N.L. Gardner, "although there is the possibility that something else may have gotten into these collections unnoticed." As it turned out, that proved to be the case. A few years later I was on a visit to the Herbarium of the Smithsonian Institution checking the collections of Delesseriaceae. In the folder of *Delesseria decipiens*, I came upon material of *Cumathamnion sympodophyllum* that he had misidentified as *D. decipiens*, namely, a collection from Trinidad Head, E.Y. *Dawson 25297* (US). Interestingly, in his manual under *Delesseria decipiens* Dawson (1965, p. 39) referred to "some very compact, short-bladed forms with coarse axes occur on heavily beaten cliff faces at Trinidad Head", while the label data include this phrase: "An atypical form on heavily dashed cliff face". The specimens are indeed very compact and short but clearly represent *C. sympodophyllum*.

Specimens Examined

U.S.A., California. Humboldt Co., Trinidad Head, ¼ mile north of the head opposite Coon Island, 12 July, 1965, *leg. Burnett = Dawson 25297* (US); about ½ mile west of Trinidad Head, 12 July 1972, "on rocks w/in *Postelsia* & *Lessoniopsis*", *De Cew s.n.* (HSC, MICH, UC 1601559). College Cove, north of Trinidad Head, 1 August 1975, *De Cew s.n.* (UC 1601560). North Bidwell Point, Elkhead, Trinidad, 26 Sept. 1990, *De Cew s.n.* (UC 1601557). Mendocino Co., Cape Mendocino, 1882, *C. G. Pringle s.n.* (FH, PC); Mendocino City, 4 June 1965, *leg. Daniels, McLaughlin & McLaughlin = Wynne 292* (MICH, UBC, UC); 30 July 1965, *Daniels & Wynne* (*Wynne 430*), Type collection: Holotype (UC 1318217); isotypes (MICH, UBC); 6 July 1966, on rocks among *Lessoniopsis littoralis*, *Wynne 777* (MICH, UC, US); 2 June 1973, *Young 624* (AHFH 84533 in UC, MICH), epiphytic on *Lessoniopsis littoralis*. Point Cabrillo, north of Mendocino City, 20 June 1974, *De Cew s.n.* (UC 1601561). Fort Bragg, May 1988 (NCC). Sonoma Co., south side of Horseshoe Cove, Bodega Marine Laboratory, July 1978, *De Cew s.n.* (UC 1601558).

Collecting History

Cumathamnion sympodophyllum was first described from a single locality, Mendocino City, Mendocino County, CA. Waaland (1973) reported it from "Botany Beach" [= Botanical Beach] near Port Renfrew, Vancouver Island, British Columbia, Canada. In their marine algal flora of California, Abbott and Hollenberg (1976) referred to this taxon as "Rare, low intertidal, Vancouver I., Br. Columbia; and on rocks exposed to heavy surf, Mendocino Bay, Calif. (type locality)". They did not cite any additional collections.

Based on Waaland's (1973) report from Vancouver Island, *Cumathamnion* has entered into the literature for British Columbia and Washington (Widdowson 1975; Scagel et al. 1986). It is included in an on-line "working list of rare marine algae" for the State of Washington (Mumford 2004). In their lists of marine algal flora of Oregon, Phinney (1977) and Hansen (1997) included *Cumathamnion* in a list of species that occur south and north of Oregon but have yet to be found within Oregon. Citing the Hansen (1997) publication, Guiry and Guiry (2007) indicate *Cumathamnion* as occurring in Oregon. Waaland (1973) reportedly deposited voucher specimens in the herbaria of the Department of Botany and that of the Friday Harbor Laboratories, University of Washington, but no such voucher specimens are now present in either herbarium. In 1995 Waaland wrote to me that in an office move the specimens were lost prior to his having deposited them in either of those herbaria. In light of the lack of any specimens of *C. sympodophyllum* collected north of northern California, it seems prudent to reconsider the distribution of this rare alga. According to Silva (2004), the southern end-point in the distribution of *C. sympodophyllum* is Bodega Head in Sonoma County, northern California. According to Gabrielson et al. (2006), the presence of *C. sympodophyllum* in the local area (of Oregon, Washington, British Columbia, and southeast Alaska) "requires confirmation". I conclude that confirmed collections of *Cumathamnion sympodophyllum* exist only for sites in Sonoma, Mendocino, and Humboldt Counties of northern

California and that the earliest known collection of this taxon was made in 1882 by C. S. Pringle from Cape Mendocino. One possible reason why this species may be under-reported in its range is that it is restricted to extremely exposed, lower littoral rocky outcrops, co-occurring with the cumaphytic kelps *Lessoniopsis littoralis* and *Postelsia palmaeformis*. Such habitats can be safely visited only at times of very low tides and reduced surf activity.

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